Allen-Bradley SLC5 Driver Configuration Manual

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1. AB SLC5 Configuration

1.1 AB SLC5

The WebAccess SCADA Node provides an interface to the Allen-Bradley SLC500 series of Programmable PLCs using the DF1 protocol. This manual describes using a Serial RS232 or RS422 connection from the SCADA node to a DF1 compatible device.

The WebAccess ABSLC5 Device Driver uses the DF1 protocol (Full Duplex Mode) to communicate to Allen-Bradley SLC500 series processors.

1.2 Module Settings

Open the configuration software given with your PLC and set the PLC port that you want to connect to WebAccess with the following settings. Remember that the port should support DF1 protocol (Usually only the Channel 0 does).

- RS232/422
- Full-Full Duplex DF1 Point-to-Point
- 8 Data Bits
- 1 Stop Bit
- Parity = None
- Error Checking = CRC (Cyclic Redundancy Check)
- Handshaking or Modem Flow Disabled
- Typical is 19200 baud. 9600 to 19200 (or faster) recommended.
- Port configured as a DF1 Slave (required to communicate with WebAccess SCADA node)

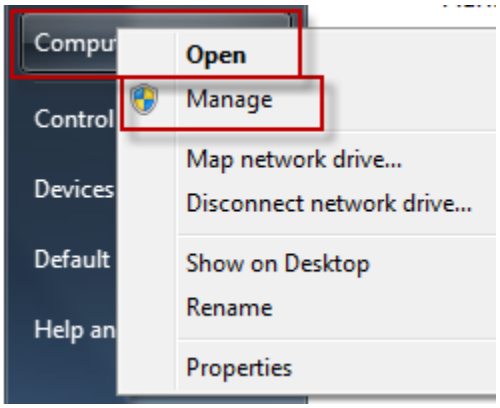
2. WebAccess Configuration

2.1 Port

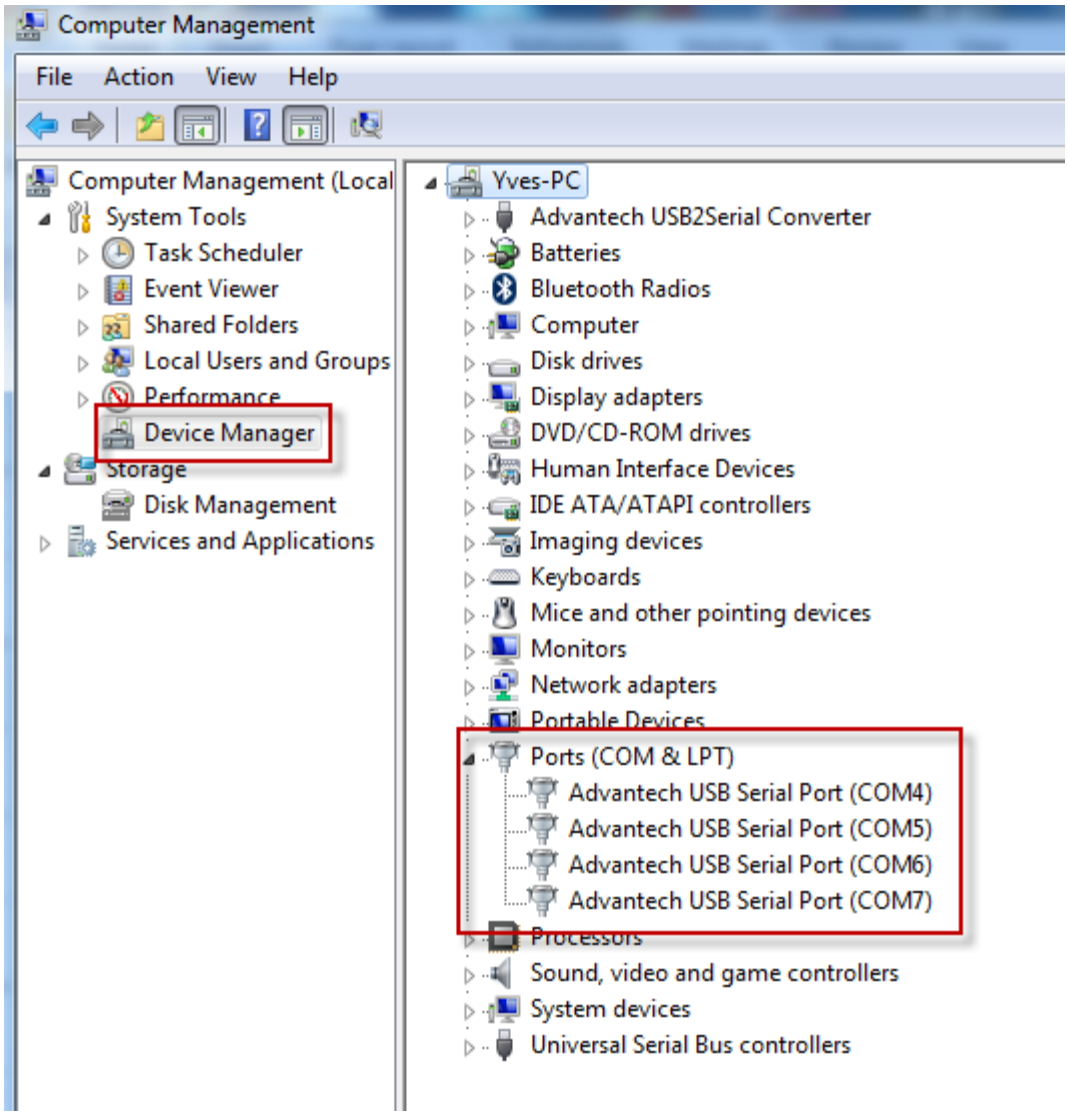
The ABPLC5 protocol uses a serial port. Even if you use a serial port server or a USB to serial converter the apparent port in your computer (and therefore the port to select in WebAccess) is a serial port.

2.1.1 Check the port number

If you are using a comport emulator and you do not know the port number then open the "Start Menu" and right click on "Computer" and select "Manage"



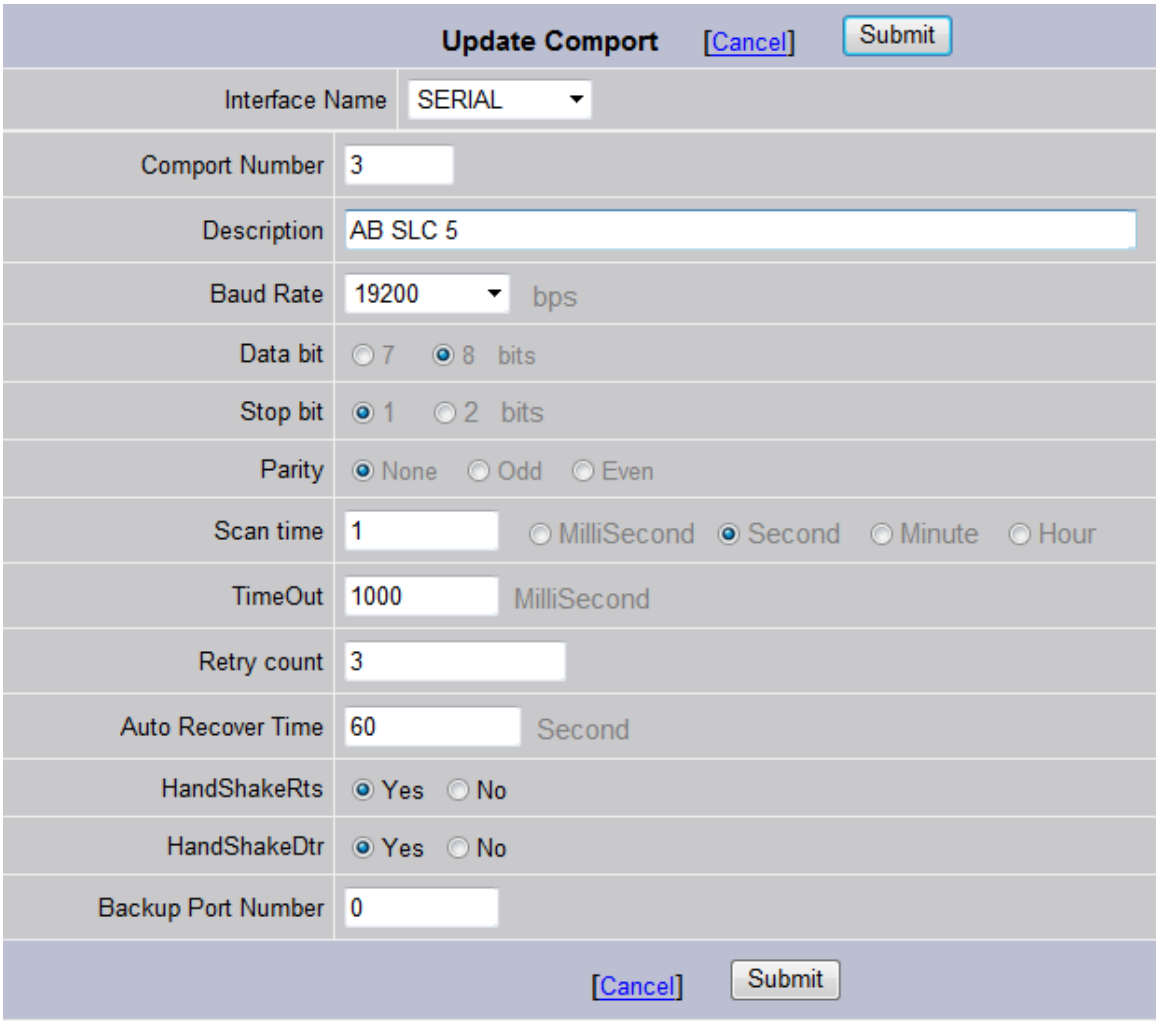
In the device manager section you can see the list of COM ports on your computer and recognize the virtual port by its driver name


Computer Management
File Action View Help
Computer Management (Local
System Tools
Task Scheduler
Event Viewer
Shared Folders
Local Users and Groups
Performance
Device Manager
Storage
Disk Management
Services and Applications
Yves-PC
Advantech USB2Serial Converter
Batteries
Bluetooth Radios
Computer
Disk drives
Display adapters
DVD/CD-ROM drives
Human Interface Devices
IDE ATA/ATAPI controllers
Imaging devices
Keyboards
Mice and other pointing devices
Monitors
Network adapters
Portable Devices
Ports (COM & LPT)
Advantech USB Serial Port (COM4)
Advantech USB Serial Port (COM5)
Advantech USB Serial Port (COM6)
Advantech USB Serial Port (COM7)
Processors
Sound, video and game controllers
System devices
Universal Serial Bus controllers

2.1.2 WebAccess Comport Page

Open your WebAccess Configuration and select the SCADA node you want to add the device to. Then select "Add a new Comport"

All the settings in this page must match the settings in all the modules attached to the port. So all the modules attached to the same comport must have the same settings.



2.1.3 Comport Number

The Serial Comport requires the comport number to match that of the physical interface (e.g. COM1, COM2, COM3, etc) on the SCADA Node.

2.1.4 Description

This is an optional field used for user reference.

2.1.5 Baud Rate

For the ABSLC5 modules the typical baud rate is 19200.

This must match the baud rate configured in the module and the eventual RS-485 to RS-232 converter.

2.1.6 Data Bits

The packets can have 7 or 8 Data Bits. The typical setting for ABSLC5 is **8 bits.**

2.1.7 Stop Bits

The packets can have 1 or 2 Stop Bits. The typical setting for ABSLC5 is **1 Stop bit.**

2.1.8 Parity

The Parity can be None, Odd, Even or Disabled. The typical setting for Adam ABSLC5 is **Parity = None.**

2.1.9 Scan Time

This is the time in milliseconds to scan the Devices. This must match the ability of the device to respond. **A typical scan rate is 1 per second**.

If the Device cannot respond as fast as the SCAN Time entered, WebAccess will scan at a slower rate.

2.1.10 Timeout

With a 1 second scan rate, **a typical Time Out = 200 Milliseconds**.

Timeout is the time waited before re-sending a communications packet that did not have a reply.

Timeout specifies how long the software waits for a response to a data request, specifically to wait for a reply from one packet. A recommended value is one-fifth the scan rate, longer if the communication device is slow.

Combined with Retry count, Timeout also determines time to consider a device or port as BAD. Timeout is the time to wait since last communication packet sent without a reply. Time is in milliseconds. Slow or poor quality communications require longer timeout. The faster the communications, the shorter the timeout required. Shorter timeouts result in faster reconnects after communication failures.

2.1.11 Retry Count

A typical Retry count = 3.

Number of times to retry communications if no reply is received from a device. Combined with Timeout, also determines time to consider a device or port as BAD.

This is the number of times after the first attempt has failed that communication should be attempted before indicating a failure. (If Retry count is 3, a total of 4 failed requests have occurred before tags are marked bad). Specifically, this is how many times to send a single packet after the field device fails to respond to the first packet. After the retry count is exceeded, all the tags in the packet are marked with asterisks and the next packet of requests is sent. A reasonable value is 3 to 5 times. After this number of tries, the tags in this packet are marked as "fail to respond" (i.e. asterisks) and are disabled. In reality, increasing the number of retries hides failures on the part of the field device to respond to a request. Essentially, increasing the retries gives the field device more chances to reply.

2.1.12 Auto Recover Time

A typical Auto Recover Time = 60 Seconds.

Auto Recover Time is the time to wait before attempting to re-establish communications with a BAD device or port.

If communications to the PLC is unusually slow due to hardware, communications or network issues, you might consider increasing this value. If communications to the PLC or RTU fails frequently, you may want to decrease this number in order to have WebAccess try to re-establish communications sooner.

If communications to the PLC, RTU or device Fails (i.e. exceeds Timeout) WebAccess will wait the Auto Recover Time before trying to re-establish communications.

2.1.13 Hand Shake RTS

The typical setting for ABSLC5 is **HandShakeRts = No**.

The RTS (Request To Send) signal is raised and lowered on the Serial Communications Port if this value set to Yes. RTS is determined by settings in the field device. *Refer to your device interface manual to determine the value for this field and the type of cable used.*

2.1.14 Hand Shake DTR

The typical setting for ABSLC5 is **HandShakeDtr = No**.

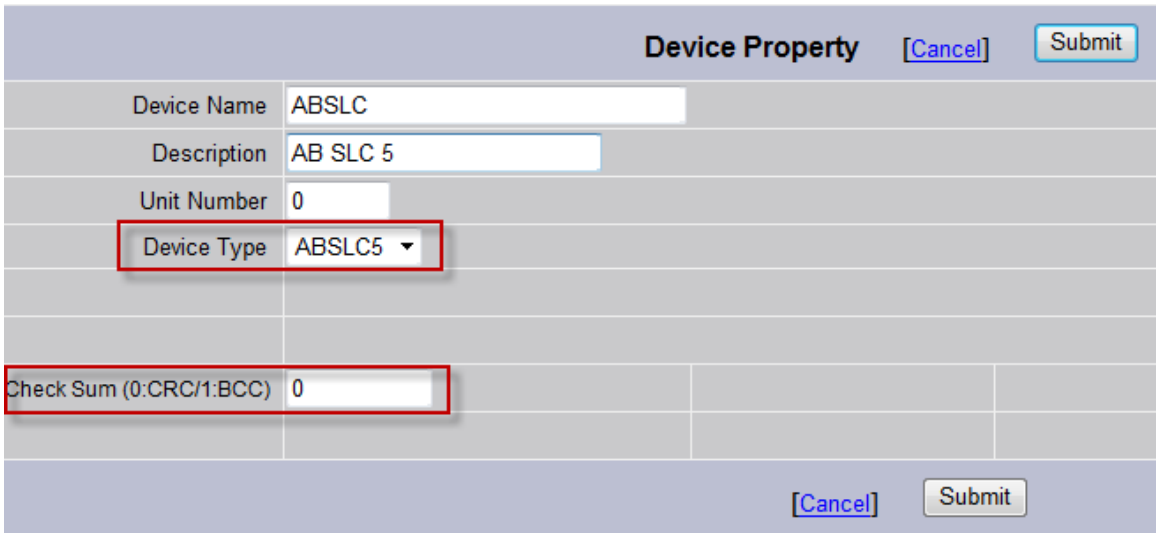
The DTR (Data Terminal Ready) signal raised and lowered on the Serial Communications Port if this value is set to Yes. DTR is determined by settings in the field device and the type of cable used.

2.1.15 Backup Port

The Backup Port has not been tested for ABSLC5

2.2 Device

Then Go to the port page and select "Add a new device". Select the ABPLC5 device Type.



2.2.1 Unit Number

Unit Number corresponds to the **Node Address** for Allen-Bradley PLC, and must match the Number used in the protocol addressing.

> Node addresses on the **DH** and **DH+** are in **octal notation**. The DH network supports addresses between 000 and 376 (octal). The DH+ network supports addresses between 00 and 77 (octal).
>
> Unit Numbers configured in **WebAccess** are in **decimal notation**.
>
> For example, the **SLC5 Addresses** 000 to 077 (octal) correspond to WebAccess Unit Numbers: 0 to 63 (decimal). *Refer to the Allen-Bradley User's Manual to determine the actual address of the PLC5.*

2.2.2 Checksum

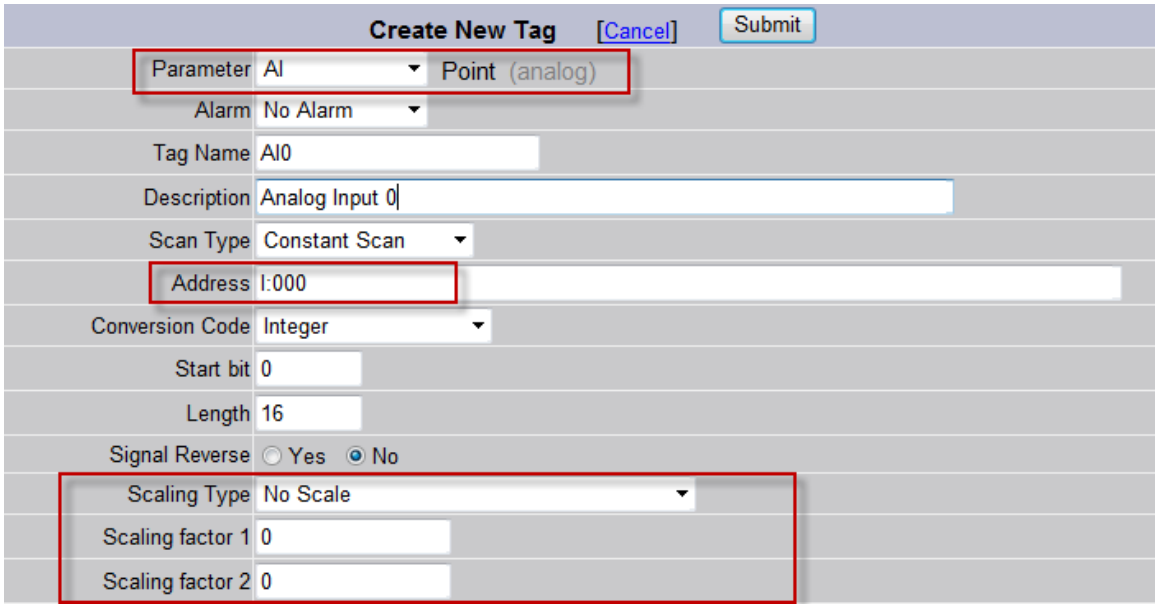
Modules can add a checksum to the transactions to confirm the integrity of the data. The checksum setting must match the one in the module.

2.3 Block

There are no preset blocks in the ABPLC5 driver but it is possible for the user to set custom blocks if necessary.

2.4 Tag

If you do not use all the channels in the device and you want to reduce your tag count you can add the parameters one by one using "Add tag".



2.4.1 Parameter

The parameter gives the type of tag you want to import. Try to select a parameter as close to the tag type as possible because it will fill the other option with the default parameters.

2.4.2 Address

The address in ABPLC5 driver starts with letters representing the data type followed by the file number then ":" and the position of the tag in the file (For Example N7:1). Some types (like input and output) do not need a file number.

2.4.3 Scaling Type

If the data sent by the module is not in a human readable unit you can use the scaling to change the unit and display a more convenient unit in the node. In most cases a linear scaling type will be sufficient.

2.5 Supported Block List

There are no predefined blocks in ABPLC5 driver.

2.6 Main Parameter List

Parameter	Data Type	Description	Address format
AI	Analog	Analog Input	I:000
AO	Analog	Analog Output	O:000
B	Analog	Binary	B3:0
C_ACC	Analog	Counter Accumulated Value	C5:0.ACC
C_PRE	Analog	Counter Preset Value	C5:0.PRE
F	Analog	Floating Point	F8:0
N	Analog	Integer	N7:0
R_LEN	Analog	Control Length	R6:0.LEN
R_POS	Analog	Control Position	R6:0.POS
T_ACC	Analog	Accumulated Value	T4:0.ACC
T_PRE	Analog	Preset Value	T4:0.PRE
C_CD	discrete	Counter Down Enable	C5:0.CD
C_CU	discrete	Counter Up Enable	C5:0.CU
DI	discrete	DI	I:000/00
DO	discrete	DO	O:000/00
R_DN	discrete	Control Done	R6:0.DN
R_EN	discrete	Control Enable	R6:0.EN
R_EU	discrete	Control Enable Unloading	R6:0.EU
T_DN	discrete	Timer Done	T4:0.DN
T_EN	discrete	Timer Enable	T4:0.EN
T_TT	discrete	Timer Timing	T4:0.TT